Defense & Space Products & Services Span ~300 Platforms

Fighter/Attack/Trainer Aircraft
30 PLATFORMS

Human Space
10 + PLATFORMS

Surface/Soldier Vehicles
15 + PLATFORMS

Bomber Aircraft
3 PLATFORMS

DoD, Civil, and Commercial Space
30 + PLATFORMS

Military Helicopters
20 + PLATFORMS

Mobility/Tanker Aircraft
40 + PLATFORMS

Missiles and Munitions
80 + PLATFORMS

Naval Platforms
10 + PLATFORMS

Special Mission/UAV Aircraft
20 + PLATFORMS

International
20 + PLATFORMS

Commercial Helicopters
20 + PLATFORMS
APU & Propulsion Materials

- Titanium Impeller
- Compressor
- Single Crystal Blades with TBC
- HPT Blade AM Tip
- EGV
- Main Shaft
- Titanium Fan
- Composite Fan Case
- Seals
- Combustor Liner
- Adv Fuel Injectors
- PM Superalloy Disk
- Center Body

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Honeywell’s Interaction with Academia

CANFSA - Center for advanced non-ferrous structural alloys

Model:
- Part of NSF sponsored research centers
- Universities participating
  - Colorado School of Mines (CSM) - Lead
  - Iowa State University (ISU)

Objectives:
- Focus is on developing advanced non-ferrous structural alloys
- Three main trust areas
  - Lightweight non-ferrous alloys (Ti, Al, Mg)
  - High performance non-ferrous alloys (Ti, Ni, CMCs, new alloy concepts)
  - Advanced alloys and processes (AM, RSP, coatings)
- Pre-competitive materials and process development
- Current members

Industry/University Cooperative Research Center (I/U CRC) at Center for NDE (CNDE) at ISU Cont’d

Snapshot of Center for NDE (CNDE) at Iowa State University (ISU)

- Established in 1985 for research collaborations with OEMs, with Honeywell (then Allied Signal) as founding member. Industry Liaison – Dr. Surendra Singh
- Annual membership $35k/yr with more than 25 members from aerospace, manufacturing and government agencies including FAA, DOE, Air Force.
- Only center in North and South America with close to 50 researchers and scientists.
- Unlimited access to reports, students, faculties, research meetings, and conferences.
- New hire and recruits and continuing education and training (Nathan Miller from DOE’s National Security Campus, managed by Honeywell FM&T, pursuing his Ph.D. program. Hired new NDE staff this year.
- Sensors development and applications. NDE models and simulations, Model Assisted POD, Advanced NDE technology including Terahertz, Laser Ultrasound, Phased Array UT, and CT

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AIMS Center Thrust Potential Alignment with Honeywell

System health management & prognosis
Foundation of structural health monitoring covering sensor development, sensor placement, data fusion, mining & informatics

Intelligent design & multidisciplinary optimization
Combining advanced optimization algorithms with validated physics based models for optimal design

Multiscale modeling from nano to structural scale
Physics based high fidelity multiphysics models of materials using molecular dynamics and continuum mechanics

Multifunctional materials & adaptive systems
Novel smart material development for future multifunctional and multipurpose needs

Composite, metallic, & superalloy materials
Complete multiscale characterization and testing of various material systems using novel state of the art equipment

Bioinspired materials and robotics
Low energy high efficiency materials and robotic structures designed for extreme environments
Honeywell

THE POWER OF CONNECTED
CANFSA - Center for advanced non-ferrous structural alloys

**Model:**
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    - Advanced alloys and processes (AM, RSP, coatings)
  - Pre competitive materials and process development
- Current members

**Objectives:**
- Become the premier place for research in the area of non-ferrous structural alloys
- Bring together university and industry researchers
  - Conduct basic and applied physical metallurgy research on non-ferrous structural alloys
- Combine computational modeling, processing, and state-of-the-art characterization methods
  - Address projects of interest to industrial members
- Train students
  - Become critical players in industries that develop or use non-ferrous alloys
Snapshot of Center for NDE (CNDE) at Iowa State University (ISU) Cont'd

- Established in 1985 for research collaborations with OEMs, with Honeywell (then Allied Signal) as founding member. **Industry Liaison** – Dr. Surendra Singh
  - **Annual membership** $35k /yr with more than 25 members from aerospace, manufacturing and government agencies including FAA, DOE, Air Force.
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  - Sensors development and applications, NDE models and simulations, Model Assisted POD, Advanced NDE technology including Terahertz, Laser Ultrasound, Phased Array UT, and CT
## Business Overview

### Developing solutions for the world’s toughest challenges

**$39.3B**
in sales for 2016

<table>
<thead>
<tr>
<th>Business Area</th>
<th>Headquarters</th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace</td>
<td>Phoenix, AZ and Rolle, Switzerland</td>
<td>$14.8B Sales</td>
</tr>
<tr>
<td>Performance Materials and Technologies</td>
<td>Morris Plains, NJ</td>
<td>$9.3B Sales</td>
</tr>
<tr>
<td>Home and Building Technologies</td>
<td>Minneapolis, MN</td>
<td>$10.7B Sales</td>
</tr>
<tr>
<td>Safety and Productivity Solutions</td>
<td>Minneapolis, MN</td>
<td>$4.6B Sales</td>
</tr>
</tbody>
</table>

**Unmatched Offerings**

- Electronic, Mechanical and Software Aircraft Solutions
- Apps, Services, Maintenance, Subscriptions
- Connectivity Solutions From Hardware to Airtime
- Turbochargers for Fuel Efficiency

**Winning Technology**

- Refining and Petrochemical Catalysts
- Gas Processing Modular Offerings
- Solstice® LGWP Materials
- SmartLine Transmitters
- Asset Optimization Software

**Connecting Homes and Buildings**

- Security and Fire
- Connecting Homes With Lyric
- Open Software Connecting “Internet Of Things” in Buildings

**Connecting Workers**

- Wireless, Voice, Mobility, Data Analytic Solutions for Workers
- Warehouse Automation
- Keeping Workers Safe

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Aerospace Global Footprint

North America
- Anniston, AL
- Glendale, AZ
- Kingman, AZ
- Phoenix, AZ
- 34th Street
- Deer Valley
- Sky Harbor
- Tempe, AZ
- Tucson, AZ
- Poway, CA
- Torrance, CA
- Norcross, GA
- Savannah, GA
- Clearwater, FL
- Sarasota, FL
- South Bend, IN
- Olathe, KS
- Wichita, KS
- Albuquerque, NM
- Prince Edward Island
- Columbia, MD
- Plymouth, MI
- Coon Rapids, MN
- Golden Valley, MN
- Minneapolis, MN
- Plymouth, MN
- Kansas City, MO
- Rocky Mount, NC
- Morristown, NJ
- Green Island, NY
- Tulsa, OK
- Urbana, OH
- Allentown, PA
- Greer, SC
- Memphis, TN
- Houston, TX
- Everett, WA
- Redmond, WA
- Renton, WA

Europe
- Sofia, Bulgaria
- Copenhagen, Denmark
- Waterford, Ireland
- Maintal, Germany
- Rauheim, Germany
- Atessa, Italy
- Vendome, France
- Toulouse, France
- Paris, France
- Thaon-les-Vosges, France
- Olomouc, Czech Republic
- Brno-Slatina, Czech Republic
- Prague, Czech Republic
- Bucharest, Romania
- Rolle, Switzerland
- Presov, Slovakia
- Cheadle, UK
- Aylesbury, UK
- Basingstoke, UK
- Bournemouth, UK
- Edinburgh, UK
- Feltham, UK
- Hemel Hempstead, UK
- Redditch, UK
- Tewkesbury, UK
- Whitstable, UK
- Yeovil, UK

South America
- Guarulhos, Brazil
- Sao Jose dos Campos, Brazil

Asia & Australia
- Ballarat, Australia
- Bintan, Indonesia
- Wuhan, China
- Xiamen, China
- Xi’an, China
- Changsha, China
- Nanjing, China
- Suzhou, China
- Shanghai, China
- Li Bing Road
- Jing Lian Road
- Pune, India
- Bangalore, India
- Kodama, Japan
- Penang, Malaysia
- Subic Bay, Philippines
- Singapore
- Gul Circle
- - Chai Chee
- Changi Bus Park
- Joo Koon Circle
- Loyang Crescent
- Ansan, South Korea
Aerospace Profile

Headquartered in Phoenix, Arizona, USA and Rolle, Switzerland

35,000 Employees
~80 Global manufacturing and service sites

9,463+ Active Patents and Applications

~ 13,000 Technologists and Engineers

Innovates and integrates thousands of products and services to advance and easily deliver safe, efficient, productive and comfortable experiences worldwide.

An airliner with Honeywell Wheels & Brakes lands somewhere in the world every 5 seconds.
Presence in Arizona

• We employ ~5,965 Arizonans, with over a billion-dollar payroll in the state.
• Arizona is home to 11 facilities supporting research and development, engineering, manufacturing, test laboratories, sales, marketing, customer service, and more.
• We invest ~$790 million/year with Arizona-based suppliers.
• Thousands of Honeywell Aerospace technologies, products and services are found on virtually every commercial, defense and space aircraft worldwide.
• Through Honeywell Hometown Solutions, we partner with leading public and non-profit institutions to connect in powerful ways to address needs in the communities where we live and work.
• In 2016, Honeywell donated over $1 million and >5,000 volunteer hours to schools, communities and non-profits.
• In support of math and science, Honeywell has multi-year relationships with the Arizona Technology Council, AZ SciTech Festival and the Fiesta Bowl Aerospace Challenge.
• Each year, we sponsor numerous Arizona students and middle school teachers to attend the Honeywell Leadership Challenge Academy and Honeywell Educators @ Space Academy at the US Space and Rocket Center.
• In partnership with Rebuilding Together, several Arizona projects are conducted annually.
Business Overview

**STRENGTHS**

- Global leader in the aviation industry
- Developing innovative safety products and solutions
- Driving modernization of global air traffic management
- Leading aircraft Connectivity revolution
- Committed to improving operational efficiencies
- Revolutionizing combat technology
- Serving all major automotive OEMs worldwide

**STRUCTURE**

- 3 Customer facing organizations supported by 5 Businesses
  - Single point of contact for customer
- Integrated product roadmaps owned by Product Businesses
  - 17 Global Business Enterprises
- Shared support structure
  - Engineering resources shared across projects, businesses
  - Single supply chain drives sourcing and manufacturing efficiencies
  - Centralized back-office functions (finance, IT, HR)
  - Common systems support structure

**AEROSPACE**

- Electronic Solutions
- Engines & Power Systems
- Mechanical Systems & Components
- Services & Connectivity
- Transportation Systems

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A Robust Portfolio of Solutions

**Services & Connectivity**
- Deliver improved efficiency and productivity for flight crews and maintainers, increased availability and profitability for owners / operators, and a more productive, enjoyable and safe travel experience for flight crews and passengers
- Enabling equipment such as satellite communication servers, cabin management, and information management systems
- Flight support (including cockpit), cabin, and maintenance apps and services
- Connectivity services
- GoDirect network and portal infrastructure (ground network, business operations)
- Proactive support
- Connected projects

**Electronic Solutions**
- Integrated avionics offerings
- Navigation, safety and surveillance solutions
- Flight management systems, flight controls and synthetic vision display technologies
- Manned, unmanned and satellite applications for space
- Integrated avionics offerings
- Navigation, safety and surveillance solutions
- Flight management systems, flight controls and synthetic vision display technologies
- Manned, unmanned and satellite applications for space

**Mechanical Systems & Components**
- Air & Thermal Management
- Electromechanical Products & Systems
- Wheels & Braking Systems
- Actuation, Fuel & Pneumatic Components
- Federal Manufacturing & Technologies (FM&T)

**Transportation Systems**
- Light vehicle diesel and gasoline turbochargers
- On- and off-highway commercial vehicle turbochargers
- Automotive software solutions
- Electric boosting
- Aftermarket

**Engines & Power Systems**
- Propulsion engines
- Auxiliary power units
- Electric power systems

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